The
FLORIDA ENTOMOLOGIST

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Gainesville, Florida

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WAR AND ITS EFFECT ON THE INSECTICIDE INDUSTRY

R. L. MILLER

Since the insecticide and fungicide industry must share chemicals with the all-out war effort, the future as to the supply of such chemicals is not readily predictable. Comparatively large supplies of most of the necessary chemicals are either available **in** the United States or available **to** the United States; but since we have no idea as to the length of the war, we have no idea as to the chemicai supplies necessary for carrying on the war to a successful conclusion.

In April 1942, Dr. R. C. Roark, of the Department of Chemistry, United States Department of Agriculture, published in the Journal of Economic Entomology an estimated list of the major chemicals consumed annually as insecticides and fungicides. This was as follows:

Lead Arsenate	50,000,000 pounds
Calcium Arsenate	35,000,000 pounds
Paris Green	2,000,000 pounds
Nicotine Sulphate	2,500,000 pounds
Rotenone containing root	6,500,000 pounds
Pyrethrum	12,000,000 pounds
Sulphur	100,000,000 pounds
Copper Sulphate	70,000,000 pounds

One can readily see that, although supplies in the quantities mentioned above are available, the problem of containers and

transportation for such supplies is a considerable one, since these supplies must compete also with the war effort.

It is necessary to prepare for any eventuality and it behooves all users of insecticide and fungicide chemicals to be as conservative as possible; and all manufacturers and distributors, as well as all research workers to find, test, prepare, and distribute substitute chemical insecticides and fungicides that can be used in the event the well-established chemical disappears from the market.

The available supply of chemicals is probably the most significant; and a listing of the major items will be given, with a short explanation of the probable supply of each. It should be understood, however, that no individual is in a position to tell definitely just what may happen to the insecticide and fungicide supply.

ANTIMONY, the toxic ingredient of Tartar Emetic, which has come into prominent use in some insecticide fields during the past years, is and probably will be scarce. The major world production of Antimony comes from China; a considerably smaller amount from Mexico; and a small amount from Bolivia.

A very interesting development regarding the use of Antimony as an insecticide has been reported from California recently. The apparent resistance to Tartar Emetic of the Citrus Thrips there and its ineffectiveness against that pest has greatly reduced the amount necessary for that purpose in California. This has made available considerably larger supplies for insecticide purposes in other places, so for the time being, at least, there should be plenty of Tartar Emetic.

ARSENICAL COMPOUNDS, which are by far the most genally used inseticides for controlling chewing insects and probably the most widely used poison in the world, will doubtless be scarce during some period of the year; but since the major demand for arsenical chemicals, both Lead and Calcium, in northern United States occurs in summer and our major demand occurs usually in the winter, it is quite likely that supplies will be available for use in Florida during the next season.

About half of the arsenic used in this country comes, in normal times, from abroad—mainly from Sweden, Belgium, and Japan. These sources are lost for the present.

At the same time other industries are demanding larger shares of the arsenic still available. Great quantities are needed for the manufacture of khaki cloth, blankets, etc. It is demanded

in increased quantities for glass making. And it is also needed for the production of chemical weed killers to replace chlorine now absorbed by the powder mills.

Many compounds have been suggested as arsenical substitutes and among these are Phenothiazine, Genicide, Dinitrocresol, Phthalonitrile, Basic Copper Arsenate, Tetra Methyl Thiuram Disulphide. Most of these compounds are comparatively new and have been tested very little. Some of them have specific toxicity for some insects and are not very toxic to others. All of these points must be investigated thoroughly before recommendations can be made as to their use.

BORAX is supplied largely from domestic sources and will probably be available, with the usual limited supply of containers and transportation as a handicap.

COPPER COMPOUNDS of various kinds are used extensively in the war effort but, fortunately, over fifty per cent of the supplies of copper in 1937 came from the United States; and Chile and Canada produced one third as much as the United States. Several forms of copper are necessary in agriculture but by far that most commonly used is copper sulphate or bluestone. Recently, however, many combinations of copper compounds have been used instead of bluestone as fungicides. Although there have been temporary shortages of copper compounds in a few instances, it is not likely that the supply will be cut off.

It would not be possible to substitute any other compound for copper as a nutritional material although many substitutes have been mentioned as a fungicide instead of copper compounds. Among these are several silver compounds, sulphur and lime sulphur, spergon, and ferric dimythyl dithic carbamate. One instance of a successful substitution of lime sulphur for copper compounds is that of dormant spraying for Citrus Scab. A comparatively good control can be obtained by fairly high concentrations of lime sulphur solution.

Since copper sprays are known to be effective for nutritional purposes and smaller amounts are needed for such applications than for soil application, it is most likely that there will be less used in soil and more used for nutritional sprays for our conservation effort.

Although several substitutes for copper compounds were mentioned, none are very well established and all should be tested considerably more before recommendations can be made.

FLUORINE COMPOUNDS, although common in the insecticide field for many years, have never been extensively used for agricultural purposes. It is possible, however, to use these compounds instead of arsenicals in some instances. A considerable quantity of these materials has been thrown away in phosphate manufacture and it may be desirable and necessary now to recover these.

Changes made in the normal shipping lanes have apparently made available more space for importing natural Greenland Cryolite so larger quantities of this product are now available in the United States than it was possible to get before the war started. This is at least one bright spot when material shortages are discussed.

MANGANESE COMPOUNDS have come into general use, both as sprays and for soil application. Of all the metallic elements, American supplies or American production during the past few years have been smallest on this item. Only 1.3 per cent of the world's supply was produced in the United States in 1937, while Russia produced 60 per cent. Cuba at the same time produced 3 per cent. It will, apparently, be necessary for us to develop some of the lower grade ore which has not been worked in the United States and at the same time conserve manganese as much as possible. Nutritional sprays of this material are effective and should probably be used more generally in view of the scarcity of this product.

PETROLEUM OILS, while very plentiful in the United States, particularly in the Texas area, are restricted considerably in their movement because of limited transportation facilities. All of the handicaps to which the movement of gasoline and fuel oil are subjected apply on spray oil stocks also. Although considerable quantity of petroleum oil is available, it will most likely be necessary to distribute the shipping or selling season over a longer period, in order to get enough transportation and containers. We are in a fortunate position, however, in that the greatest demand for oil spray products occurs during the summer or early fall when the demands for fuel oil are least.

A most desirable chemical would be a subsitute for oil sprays for scale control. Such a product is available for Purple Mite control at present. Very spectacular kills can be obtained by the dinitro compound on mites and spiders, but it is still necessary to use oil sprays for the control of scale insects and white flies.

(To be continued)

PROCEEDINGS OF THE ANNUAL MEETING OF THE FLORIDA ENTOMOLOGICAL SOCIETY

Orlando, Florida, December 11-12, 1942

Because of the large number of entomologists located in the vicinity of Orlando, and in consideration of the restrictions on travel, the 1942 annual meeting of the Society was transferred from Gainesville to Orlando. The meeting was held in the San Juan Hotel with President K. E. Bragdon presiding. The register of attendance showed that nineteen members were present and it also included the names of twenty-five visitors.

President Bragdon chose as the theme of his address, "Let's Get Closer to the Farmer." He urged entomologists to devote as much time and effort as possible to insect control problems as an aid to the war effort of the Nation. Other papers read at the meeting were: Recent Developments in Mole Cricket Investigations by C. B. Wisecup and Norman C. Hayslip; Some Notes on Thysanoptera, and Natural Control of Nematodes by J. R. Watson; Investigations of the Green Scale, *Coccus viridis* (Green) in Southern Florida, by John M. Frederick; Injury and Control of Purple Mites on Citrus, by W. L. Thompson; Sidelights of Collecting in Florida, by Dean F. Berry; The White-Fringed Beetles, by Hiram C. Young; War and Its Effects on the Insecticide Industry, by R. L. Miller; Some Notes and Observations on the Natural Reduction of Anopheles Mosquito Larvae in Certain Environments, by Homer Hixson; and History of the Mexican Bean Beetle in Florida, by A. N. Tissot.

On Friday afternoon the members of the Society visited the U.S.D.A. Laboratories where Dr. E. F. Knipling and members of his staff showed and explained the methods employed in investigations of the various projects.

A most enjoyable event of Friday evening was the Annual Banquet and Get Together of the Society. Held in the Masonic Temple, this function was enjoyed by about fifty members and guests. Mr. W. W. Yothers very capably served as toastmaster and introduced the speakers. Dr. E. F. Knipling gave the message of welcome which was responded to by Professor J. R. Watson. The toastmaster paid tribute to two venerable and esteemed members, Doctors Herbert Osborn and H. T. Fernald who still take a keen interest in the affairs of the Society and serve as an inspiration to their younger associates. The principal speaker was Major J. Q. A. Daniels, Surgeon at the Army

Air School at Orlando. Major Daniels spoke of the important role played by entomology in helping to maintain the health and well-being of the men in the armed services and mentioned some of the difficulties encountered in trying to make the findings of workers in the laboratories available to the men in the ranks.

The sincere appreciation of the Society is due all Orlando entomologists, whose enthusiastic interest and untiring effort did so much to make the meeting a success. Special mention must be made of the staff of the U.S.D.A. Laboratory who arranged for the musical entertainment during the banquet; of Mr. A. H. Madden and Dr. B. V. Travis who were responsible for many of the local arrangements; to Mr. Dean F. Berry for his display of Lepidoptera; and to the management of the San Juan Hotel, where the meetings were held.

BUSINESS MEETING

The business meeting of the Society was held Saturday morning, December 12, 1942, at the close of the paper reading session.

REPORT OF THE SECRETARY

The report of the Secretary was read and approved as read.

REPORT OF THE EXECUTIVE COMMITTEE

A number of the members of the Society have entered the armed services, resulting in temporary vacancies in some offices and standing committees. The Executive Committee named C. B. Wisecup to fill the position of Treasurer-Business Manager temporarily vacated by J. W. Wilson. President Bragdon appointed Mr. Wisecup as Chairman of the Membership Committee left vacant by J. W. Wilson, and W. L. Thompson was named to fill the vacancy in the Committee, caused by the departure of Herbert Spencer.

REPORT OF THE TREASURER-BUSINESS MANAGER

For the year ending November 30, 1942.

Receipts:

Balance on Hand, November 30, 1941	$121.80
From Dues of Members and Subscriptions to the Florida Entomologist	118.63
From Advertising in Florida Entomologist	70.00
From Sale of Back Numbers	21.00
Total	$331.43

Expenditures:

Pepper Printing Company, printing Florida Entomologist and Supplies	$209.01
Notices, postage, miscellaneous	33.25
W.P.A. (for employing a worker on insect list)	15.00
Incidentals, 1941 Annual Dinner	3.00
Exchange on checks at Bank	3.56
Total Expenditures	263.82
Balance on Hand, November 30, 1942	$ 67.61

Assets Not Shown Above:

Due from Members for Etchings, Exerpts, etc.	$28.95
Due from Members for Back Dues	64.00
	$92.95

Liabilities:

Pepper Printing Co., for printing Vol. 25, No. 3	$32.72

Respectfully submitted,
C. B. WISECUP,
Acting Treasurer-
Business Manager

On motion the report of the Treasurer-Business Manager was accepted, subject to approval of the Auditing Committee.

REPORT OF THE AUDITING COMMITTEE

I wish to report that I have examined the books of the Treasurer-Business Manager and have found the accounts accurate and in order.

Respectfully submitted,
A. H. MADDEN

On motion the report of the Auditing Committee was accepted.

REPORT OF THE MEMBERSHIP COMMITTEE

The Membership Committee recommend that the following associate members be raised to the rank of active membership: M. L. Anderson; J. G. Brunton; P. W. Calhoun; J. C. Crawford; W. E. Dove; A. B. Gurney; Aurthur M. Hill, Jr.; R. F. Joyce; C. F. Ladeburg; M. D. Leonard; J. W. McGough; A. M. Phillips, and M. C. Van Horn. The recommendation was also made that the following be elected to associate membership: Robert Burrell; O. W. Calkins; George Culpepper; C. C. Deonier; Paul M. Eide; John M. Frederick; J. B. Gahan; Philip Granett; Mrs. H. Hainlin; E. G. Kelsheimer; E. F. Knipling; A. W. Lindquist; L. C. McAlister; W. C. McDuffie; J. C. Russell; H. O. Schroeder, and Mike Wright.

Respectfully submitted,
C. B. WISECUP, *Chairman,*
A. H. MADDEN,
RALPH L. MILLER,
W. L. THOMPSON.

On motion this report was approved and placed on file.

OLD BUSINESS

Due notice having been given in regard to proposed changes in the By-Laws, (published in THE FLORIDA ENTOMOLOGIST, Vol. 24: 61-62, Dec., 1941) these were presented to the Society for final action.

On motion these changes and additions were approved and incorporated in the By-Laws of the Society.

NEW BUSINESS

Because no provision is made for dealing with members delinquent in their dues, the Membership Committee proposed the following change in the By-Laws: Insert under Article IV: "Section 3.—Any member who shall become delinquent of two years' dues, and after due notice shall fail to pay at least one year's dues, shall be dropped from the membership roll."

On motion this proposal was accepted subject to final approval at the next meeting of the Society.

About twenty-five members of the Society now are in the armed services in various parts of this country and in foreign lands. Because they are unable to enjoy all the privileges of membserhip and in view of the fact that their copies of THE FLORIDA ENTOMOLOGIST often become lost and fail to reach them, the Executive Committee made the following proposal: For the duration of the war members of the Society in the armed services shall be given an inactive status, their dues shall be suspended, and their names removed from the mailing list of THE FLORIDA ENTOMOLOGIST. Any eligible member not wishing to avail himself of this privilege may retain his present status by paying dues and notifying the Secretary to retain his name on the mailing list for THE FLORIDA ENTOMOLOGIST. A sufficient number of copies of THE FLORIDA ENTOMOLOGIST shall be set aside so that any member who so desires can complete his files after returning from the service.

It was further proposed that a committee to be named by the President shall prepare a resolution and greeting to be sent to each member of the Society in the armed services, together with notice of the above proposal.

On motion this proposal was approved and President Bragdon named Mr. W. W. Yothers as a committee of one to prepare the resolution and greeting to be sent to all members concerned.

REPORT OF COMMITTEE ON GREETINGS

THE FLORIDA ENTOMOLOGICAL SOCIETY
EXTENDS GREETING
TO ALL ITS MEMBERS IN THE ARMED FORCES OF OUR COUNTRY

The Society has many members in the Armed Forces. Some of these are in Foreign Countries fighting the battles of a free people. Others soon will follow. Others are fighting insects and insect borne diseases. This is the first time in the history of man that Entomologists have ever received any recognition in the Armed Forces of a Nation.

To those Entomologists who have temporarily discontinued their scientific careers, we extend our profound gratitude and we pledge our support to assist them to regain their former Status, when Peace comes.

To those Entomological Pioneers who are fighting their Countries' battles with the Science of Insects, we extend Greetings and trust their work will mark an Epoch in the Annals of Science.

To Each and All of you, We wish a speedy return to the Paths of Peace.

Respectfully submitted,
W. W. YOTHERS, *Committee.*

REPORT OF THE NOMINATING COMMITTEE

Your committee wishes to nominate the following members to fill the designated offices and positions for the year 1943:

President—T. H. Hubbell
Vice-President—A. H. Madden
Secretary—A. N. Tissot
Editor of the Florida Entomologist—J. R. Watson
Associate Editor—E. W. Berger
Members of Executive Committee—
Ralph L. Miller (for 2 years)
John D. Haynie (for 1 year)
Note—Mr. Haynie is named to fill the temporary vacancy left by L. S. Maxwell.

Respectfully submitted,
B. V. TRAVIS
HOMER HIXON

On motion the Report of the Nominating Committee was accepted and the President was instructed to cast a ballot for the election of the persons nominated. This being done they were declared elected.

Following the transaction of the above business, the meeting adjourned.

Mr. Dean F. Berry, Orlando, Florida, exhibited in the meeting place of the Society, an excellent display of Florida Hesperidae.

Respectfully submitted,
A. N. TISSOT, *Secretary*

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